BSIT/D-12
COMPUTER SYSTEM ARCHITECTURE-I
Paper–BSIT-501

Time Allowed : 3 Hours] [Maximum Marks : 45

Note: Attempt five questions in all. Question No. 1 is compulsory. Attempt one question from each Unit.

(a) What is the difference between micro-operation and macro-operation? 2
(b) What is the difference between Hardwared control and microprogrammed control? 2
(c) Why control data register is called pipeline register? 2
(d) What is PSW? 2
(e) What is effective address? 1

UNIT–I

(a) What is instruction cycle? What are different phases of instruction cycle? 6
(b) A computer uses a memory unit with 256 K words of 32 bits each. A binary instruction code is stored in one word of memory having 64 registers. The instruction has four parts: indirect bit, op code, register code, and address pad. Find:
   (i) How many bits are there in op code, register code, and address?
   (ii) Draw instruction word format and indicate number of bits in each part.
   (iii) How many bits are there in Data and address input of the memory?

3. (a) What are memory reference instructions and register reference instructions?
   (b) What are two instructions needed in basic computer order to set the E flip-flop to 1?

UNIT-II

4. (a) Design an arithmetic circuit with one selection variable and two n bit data inputs A and B:
   \[ \begin{align*}
   S & : C_{in} = 0 \quad C_{in} = 1 \\
   0 & : d = A + B \quad d = A + 1 \\
   1 & : d = A - 1 \quad d = A - B
   \end{align*} \]
   (b) A digital computer has a common bus system for 16 bits, register for 32 bits each:
      (i) How many selection I/Ps are there in 6K multiplexer?
      (ii) What size of multiplexer are there in bus?
      (iii) How many multiplexer are needed?